The author states some observations which he has made on the coloured marks apparent in a variety of the horse, common in Scotland, and there called the *Eel-back Dun*, and which afford grounds for doubting the accuracy of the conclusions deduced in a paper, by the late Earl of Morton, published in the Philosophical Transactions for 1820. The title of the paper referred to is "A Communication of a singular fact in Natural History," namely, that a young chestnut mare of seven-eighths Arabian blood, after producing a female hybrid by a male quagga, had subsequently produced, by a fine black Arabian horse, a filly and a colt, both of which had the character of the Arabian breed as decidedly as could be expected where fifteen-sixteenths of the blood are Arabian, but in colour, in the hair of their manes, and the markings of the back and legs, bore a striking resemblance to the quagga.

The author, finding that similar markings are very commonly met with on the Eel-back dun ponies of Scotland, suggests, that as the breed of the mare in question was not pure she may have inherited the tendency to those peculiar markings. He moreover observes, that the cross bar markings on the legs are not found in the *quagga*, but only in the *zebra*, which is a species quite distinct from the quagga; a fact which he considers as completely overturning the reasoning by which the conclusions stated in Lord Morton's paper were deduced. The facts, he thinks, admit of a more natural explanation, and one more consistent with the known physiological laws of developement, by supposing the stain in the purity of the mare's Arab blood to have arisen from the circumstance of an early progenitor of the mare having belonged to the Eel-backed dun variety, the peculiarities of which reappeared in a later generation.

8. "On the Structure and Functions of the Spleen." By Thomas Gordon Hake, M.D. Communicated by Francis Kiernan, Esq., F.R.S.

The author, passing in review the various opinions which have been advanced by anatomists respecting the intimate structure of the spleen, arrives at the conclusion that hitherto only vague and premature inductions have been made. It is generally admitted that the fibrous envelope of this organ is formed of the external fibres of the splenic vein; and that from the internal surface of this envelope fibrous prolongations are continued into the interior of its substance, giving support to a fine cellular membrane, which is continuous with their edges, and variously reflected so as to constitute cells. The parenchyma, or solid structure of the spleen, everywhere accompanies these membranous productions, and forms the exterior walls of the cells; being composed of branches of the splenic arteries, of the granular terminations of those arteries constituting the *splenic grains* of Malpighi, of *venules*, which ramify around the splenic grains, and of *cellules*, into which the venules open, and from which the splenic veins take their rise. The author concludes, as the result of his inquiries, that a dilatable cellular tissue exists, containing venous blood, between the granules within which the arteries ter-

minate, and the venules on the outer side of the splenic grains: that the venous membrane, which is continued from the cells to the cellules, as well as to the venules, becoming more and more attenuated, but without changing its essential structure, gradually loses its tubular form, and resumes its primitive character of cellular tissue; and that the artery, in like manner, is limited in its distribution within the granules by a cellular structure, which becomes vicarious of it, and determines the function it has to perform.

The author, in conclusion, offers some observations on the probable functions of the spleen. He considers the opinion which supposes that organ to be distended, at particular times, with arterial blood, as being completely refuted by the evidence derived from the preceding account of its minute structure; and suggests the probability of the spleen being rather a diverticulum for venous blood.

The paper is accompanied by seven highly finished drawings illustrating the structures described.

9. "Additional Experiments on the formation of Alkaline and Earthy Bodies by chemical action when carbonic acid is present." By Robert Rigg, Esq., F.R.S.

The author gives a detailed account of several experiments in which sugar, water, and yeast only were employed, and from which he deduces the conclusion that alkaline and earthy matters are formed by chemical action. In one set of experiments, some of which were made in silver, others in china, and others in glass apparatus, after the vinous fermentation had gone on during five days, the quantity of ashes obtained was, in the silver apparatus eighteen, in the china nineteen, and in the glass fifteen times greater than the previous quantity. A further examination of these ashes showed that they consisted of potass, soda, lime, and a residue not acted upon by muriatic acid. The author states that, however irreconcilable to our present chemical knowledge this important conclusion may at first sight appear, yet when it is taken in connexion with the decomposition of other vegetable matter, and with the phenomena which accompany the growth of plants, it may not excite surprise; and may be regarded as in harmony with the phenomena of natural science. He concludes by offering suggestions towards extending the inquiry into the subject of the formation of bones of animals by the action of the powers inherent in their organization.

10. "On the Difference of Colour in different parts of the Bodies of Animals." By James Alderson, M.A., M.D., late Fellow of Pembroke College, Cambridge. Communicated by P. M. Roget, M.D., Sec. R.S., &c.

The hypothesis advanced by the author in explanation of the well-known partial absence of the coloured pigment or *rete mucosum*, in different parts of the human body, and that of other animals, is that it is due to the union or adhesion of the epidermis and the true skin, so as to exclude the rete mucosum. He supports this hypothesis by the analogy of a cicatrix, which is the result of an organization of a